AMENDMENTS TO CLAIMS

The following is a complete listing of all claims, wherein Claim 43 is amended as follows:

Claims 1-42: canceled.

43. (previously presented) The method of Claim 57 wherein said device is irreversibly switchable from a first chemical state to a second chemical state of said bi-stable molecule.

44. (previously presented) The method of Claim 57 wherein said device is reversibly switchable between a first chemical state and a second chemical state of said bi-stable molecule.

45. (previously presented) The method of Claim 57 wherein said connector species comprises a layer of said bi-stable molecules.

46. (original) The method of Claim 45 wherein said layer of said bi-stable molecules has a thickness of a monolayer of said bi-stable molecules.

47. (previously presented) The method of Claim 57 wherein said connector species is selected from the group consisting of metalocenes, rotaxanes, pseudorotaxanes, and catenanes.

48. (currently amended) A method of operating a crossed-wire device comprising a pair of crossed wires which form a junction where one wire crosses another and at least one connector species connecting said pair of crossed wires in said junction, said junction having a functional dimension in nanometers, wherein said at least one connector species and said pair of crossed wires forms an electrochemical cell, said method comprising biasing both wires at least once with a first voltage sufficient to cause an electrochemical reaction in said connector species and switch its state,

wherein said at least one connector species comprises an electrically addressable molecular species.

49. (previously presented) The method of Claim 48 wherein said at least one connector species forms a quantum state molecular switch comprising an electrically adjustable tunnel junction between said two wires.

50. (previously presented) The method of Claim 48 wherein at least one of said two wires has a thickness that is about the same size as said at least one connector species, and over an order of magnitude longer than its diameter.

51. (previously presented) The method of Claim 50 wherein both of said two wires have a thickness that is about the same size as said at least one connector species.

52. (previously presented) The method of Claim 48 wherein both of said two wires have a thickness that ranges from sub-micrometer to micrometer.

53. (previously presented) The method of Claim 48 wherein said junction forms a singly configurable switch, which is set by biasing said wires only once, or a reconfigurable switch, which may be set and reset by biasing said wires more than once.

54. (previously presented) The method of Claim 53 wherein said junction is at least one of elements selected from the group consisting of resistors, tunneling resistors, diodes, tunneling diodes, resonant tunneling diodes, and batteries.

55. (previously presented) The method of Claim 48 wherein each said wire independently comprises a conductor or a semiconductor.

56. (previously presented) The method of Claim 55 further including an insulating layer or a modulation-doped coating on at least one of said wires.

57. (previously presented) The method of Claim 48 wherein said at least one connector species comprises a bi-stable molecule.

58. (previously presented) The method of Claim 57 wherein said bi-stable molecule is one that displays a significant hysteresis in its current-voltage curve, obtained either from solution electrochemistry or from current-voltage characteristics in a solid-state junction.

59. (previously presented) The method of Claim 48 wherein said at least one connector species is either oxidized or reduced.

60. (previously presented) The method of Claim 48 further comprising biasing both wires with a second voltage, lower than said first voltage, to sense its state.